REMARKS/ARGUMENTS

The claims are 2-6. Claim 6 has been amended to better define the invention. Support for the amendments may be found, *inter alia*, in FIGS. 2 and 4-7 of the drawings and in the specification in the paragraph bridging Pages 8 and 9 and in the full paragraph on page 11. Reconsideration is expressly requested.

Claims 3-6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Mukai et al. U.S. Patent Application Publication No. 2004/0011776* in view of *Parmelee et al. U.S. Patent No. 4,731,518* and *Yamada et al. U.S. Patent Application Publication No. 2003/0010753*. The remaining claim 2 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Mukai et al.* in view of *Parmelee et al.* and *Yamada et al.* and further in view of *Benfield U.S. Patent No. 3,594,534*.

In view of the foregoing claim amendments and the following remarks, Applicants respectfully traverse the rejections.

As recited in amended claim 6, Applicants' invention provides a welding wire storage device for a welding system. The welding wire storage device includes a housing, a wire core

surrounding a welding wire, a measuring device for detecting deflection of the wire core, a guide element, a wire guide hose for the wire core, and first and second coupling mechanisms. The housing has a free space, a first end region and a second end region opposite the first end region. The wire core is arcuately arranged in the housing to form a wire core radius in the housing and to lie freely in the free space of the housing. The wire core has a first end fixed in the first end region of the housing.

As further recited in amended claim 6, the measuring device for detecting deflection of the wire core is disposed within the housing and is able to detect the deflection of the wire core by measuring a change in the wire core radius. The guide element is on the second end region of the housing and displaceably mounts the wire core. The wire guide hose for the wire core includes a first wire guide hose section and a second wire guide hose section. The first and second coupling mechanisms are arranged on the housing for connection with the wire guide hose. The housing is arranged within the wire guide hose in that (1) the first coupling mechanism is arranged at the first end region of the housing and connects the housing with the first wire guide hose section, and (2) the second coupling mechanism is arranged at the

second end region of the housing and connects the housing with the second wire guide hose section.

In this manner, Applicants' invention provides means disposable between a welding torch and a welding control region for accommodating excess welding wire being passed from the welding control region to the welding torch so that a welding system that implements Applicants' invention has greater operational flexibility for handling various wire feeding and welding situations.

It is respectfully submitted that none of the references cited by the Examiner discloses or suggests Applicants' invention as recited in amended claim 6, including each of (1) a measuring device for detecting deflection of a wire core, the measuring device being disposed in a housing and being able to detect the deflection of the wire core by measuring a change in the wire core radius of the wire core in the housing, and (2) a housing arranged within a wire guide hose in that a first coupling mechanism arranged at a first end region of the housing connects the housing with a first wire guide hose section and a second coupling mechanism arranged at a second end region of the housing connects the housing with a second wire guide hose section, with

a wire core arcuately arranged in the housing to form a wire core radius in the housing, the wire core surrounding a welding wire.

As recognized by the Examiner, the primary reference *Mukai et al.* fails to disclose or suggest a measuring device for detecting deflection of a wire core and a wire core surrounding a welding wire.

Moreover, *Mukai et al.* also fails to disclose or suggest a housing that has the features and arrangement of the housing of Applicants' welding wire storage device as recited in amended claim 6. In *Mukai et al.*, a wire guide tube 3 covers a wire 1 as the wire 1 travels from a roll of wire at the welding wire magazine 2 to the welding torch 4 where the torch melts the wire to form a weld. Specifically, *Mukai et al.* shows that the wire guide tube 3 extends between a push-end feeding unit 6 for the wire and a pull-end feeding unit 5 for the wire. Within this region between feeding units 5 and 6 in the apparatus of *Mukai et al.*, no structure interrupts the wire guide tube 3 to divide the wire guide tube 3 into first and second sections.

Accordingly, no coupling mechanisms in this region of the apparatus of *Mukai et al.* are attached at opposite ends of a

housing to connect the housing to first and section wire guide hose sections. It is respectfully submitted that the Examiner's position is unfounded that feeding units 5 and 6 of *Mukai et al.* are first and second coupling mechanisms as recited in Applicants' amended claim 6. Applicants' amended claim 6 recites that first and second coupling mechanisms are arranged at first and second end regions, respectively, of a housing and connect the housing with first and second wire guide hose sections, respectively.

Mukai et al. fails to disclose or suggest that the wire guide tube 3 continues in the area upstream of push-feeding unit 6 and that the wire guide tube 3 continues in the area downstream of pull-feeding unit 5. Accordingly, even if the wire guide tube 3 were connected to either of feeding units 5 and 6, which it is respectfully submitted is not shown or disclosed in *Mukai et al.*, no further wire guide tube continues on the opposite sides of feeding units 5 and 6, and therefore neither of feeding units 5 and 6 connects a first wire guide hose section with a second wire guide hose section.

In summary, *Mukai et al.* discloses a wire surrounded by a single wire guide tube and two feeding units. Applicants' welding

wire storage device as recited in amended claim 6 includes a housing, a wire guide hose having first and second wire guide hose sections, and first and second coupling mechanisms. Two feeding units and a wire surrounded by a single wire guide tube are not a housing, a wire guide hose having first and second wire guide hose sections, and first and second coupling mechanisms attached at opposite ends of the housing and connecting the housing with the first and second wire guide hose sections.

Moreover, the wire guide tube 3 of *Mukai et al.* is not a wire core, and *Mukai et al.* fails to disclose or suggest a wire core surrounding a welding wire, which failure has been recognized by the Examiner.

The secondary reference to *Parmelee et al.* fails to remedy the defects and deficiencies of *Mukai et al.*

As recognized by the Examiner, *Parmelee et al.* fails to disclose or suggest a measuring device for detecting deflection of a wire core.

Moreover, although *Parmelee et al.* discloses a wire core surrounding a welding wire, which the Examiner has recognized, *Parmelee et al.* fails to disclose or suggest a housing having the

features and arrangement of the housing of Applicants' welding wire storage device as recited in amended claim 6.

Specifically, no housing in *Parmelee et al.* interrupts cable c of *Parmelee et al.* as cable c runs from the electrode feeder EF to the gun G. Moreover, no elements within the gun G or the gas nozzle 54 of *Parmelee et al.* hold a wire core, that surrounds a welding wire, in a manner such that the wire core lies freely therein and forms a wire core radius therein. Any structural element in the gun G or the gas nozzle 54 of *Parmelee et al.* that holds the wire core 100 holds the wire core without play and coaxially. See FIGS. 5-6, 9-10, and 12-14 of *Parmelee et al.*

In contrast, Applicants' housing as recited in amended claim 6 not only is arranged within a wire guide hose in that a first coupling mechanism arranged at a first end region of the housing connects the housing with a first wire guide hose section and a second coupling mechanism arranged at the second end region of the housing connects the housing with a second wire guide hose section, but also has a wire core arcuately arranged inside of it to form a wire core radius inside of it.

The next secondary reference to *Yamada et al.* fails to remedy the defects and deficiencies left over from the combination of *Mukai et al.* and *Parmalee et al.* with respect to Applicants' amended claim 6.

It is respectfully submitted that *Yamada et al.* fails to disclose or suggest a measuring device for detecting deflection of a wire core, the measuring device being disposed in a housing and being able to detect the deflection of the wire core by measuring a change in the wire core radius of the wire core arcuately arranged in the housing.

Although *Yamada et al.* discloses an optical sensor 100 that can be a measuring device for measuring deflection of the wire 1 of the wire electric discharge machining device of *Yamada et al.*, which device is not a welding device, this optical sensor is much different than the measuring device of Applicants' welding wire storage device as recited in amended claim 6. The optical sensor 100 of *Yamada et al.* is not arranged within a housing that houses a welding wire and houses a wire core surrounding the welding wire, and the optical sensor 100 fails to detect deflection of the wire core by measuring a change in a wire core radius within the housing.

The optical sensor 100 of *Yamada et al.* is disclosed as detecting a state in which it becomes impossible to conduct an automatic wire connection when the wire electrode cannot be smoothly fed because of an obstruction caused by friction in the inserting passage. See, for example, paragraph [0027] of *Yamada et al.* This measuring device 100, therefore, serves only as an error indicator and not as a measuring device for (1) detecting an amount of the deflection of the wire core as an indicator of the amount of welding wire being temporarily stored within a housing of a welding wire storage device and (2) measuring a change in a wire core radius within a housing. By measuring the deflection of the wire core in a housing and by measuring the change in radius of the wire core in the housing, the amount of welding wire that is temporarily stored in the welding wire storage device can be determined so that the welding wire feeding system can be correspondingly adjusted.

As seen in FIG. 3 of *Yamada et al.* and as explained in paragraph [0031] of *Yamada et al.*, the optical sensor 100 measures merely a movement of the wire in a single plane transverse to the running direction of the wire. If the wire 1 is in the center of the plane, then the system of *Yamada et al.* is operating smoothly. If the wire diverges from the center of

plane, then the system of *Yamada et al.* is being strained. *Yamada et al.* makes no mention that optical sensor 100 is used to measure a change in radius of the wire of *Yamada et al.*, let alone a change in radius of a wire core which surrounds the wire and which is located in a housing along with the wire.

Moreover, as recognized by the Examiner, *Yamada et al.* fails to disclose a wire core and the housing as recited in Applicants' amended claim 6. *Yamada et al.* is not directed to a welding process, and therefore has requirements for a wire that are different than those for the welding system in which Applicants' welding wire storage device is implemented.

The further secondary reference, *Benfield*, fails to remedy the defects and deficiencies of *Mukai et al.*, *Parmalee et al.*, and *Yamada et al.* with respect to Applicants' amended claim 6. Even though *Benfield*, has a quick-lock on its welding apparatus, *Benfield* fails to disclose or suggest a measuring device for detecting deflection of the welding wire, and *Benfield* fails to disclose or suggest a housing that holds a wire core freely in a free space therein, with the wire core surrounding a welding wire and arranged arcuately in the housing to form a wire core radius in the housing. The wire in *Benfield* will simply run straight

through aligned openings 67, 68, and 69 in the unit 12 and housing means 28 of *Benfield*, and then will simply run coaxially with the barrel means 32 to the welding torch. See FIGS. 1-2 and 4 and column 3, lines 34-36 of *Benfield*.

Accordingly, it is respectfully submitted that *Mukai et al.*, *Parmalee et al.*, *Yamada et al.* and *Benfield*, whether viewed separately or in combination, would have failed to teach one of ordinary skill in the art to make Applicants' welding wire storage device as recited in amended claim 6.

Accordingly, it is respectfully submitted that Applicants' amended claim 6, together with claims 2-5 which depend thereon, are patentable over the cited references whether viewed separately or in combination.

In summary, claim 6 has been amended. In view of the foregoing, it is respectfully requested that the claims be allowed and that this application be passed to issue.

Applicants also submit herewith a Supplemental Information Disclosure Statement.

Respectfully submitted,
Josef ARTELSMAIR

COLLARD & ROE, P.C.
1077 Northern Boulevard
Roslyn, New York 11576
(516) 365-9802

Frederick J. Dorchak, Reg. No.29,298
Caleb D. Wilkes, Reg. No.60,873
Attorneys for Applicants

FJD:cdw

Enclosures: Supplemental Information Disclosure Statement

EXPRESS MAIL NO. EM 618 162 654US
Date of Deposit: December 8, 2011

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10, on the date indicated above, and is addressed to the MAIL STOP RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Amy Klein

R:\Patents\A\ARTELSMAIR ET AL 8 PCT\RCE - 2\Preliminary Amendment in RCE.wpd